WHAT IS CLAIMED IS:

1. A method of estimating a temperature, comprising the steps of:

(a) specifying a first object;

(b) specifying an energizable second object that generates heat upon an energization thereof, wherein said second object exhibits a temperature change in response to heat which is more rapid than a temperature change of the first object in response to heat, and wherein said second object is positioned in the vicinity of the first object for exchanging heat therebetween such that said second object assumes a temperature approximately equal to that of the first object in the absence of heat generation therein;

(c) determining the temperature of one of the first and second objects; and

(d) estimating the temperature of the other of the first and second objects on the basis of the temperature determined in the step (c) and a specific value that substantially indicates the amount of the energization of the second object.

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2. A method of estimating a temperature according to claim 1, wherein, when the temperature of the first object is assumed as T1, the temperature of the second object as T2, and a temperature increment quantity of the second object that is related to the specific value substantially indicating the amount of the energization as ΔT, a relation between the temperature increment quantity ΔT and the specific value substantially indicating the amount of the energization is preliminarily set, and the estimation in the step (d) is executed according to the following equation: $T2 = T1+\Delta T$.

3. A method of estimating a temperature according to claim 2, wherein the second object is a power semiconductor,

wherein the first object is a coolant for cooling the power semiconductor element, and

wherein the step (d) includes a process of determining the temperature increment quantity ΔT in accordance with a specific value that substantially indicates the amount of energization of the power semiconductor element from the relation between the predetermined temperature increment quantity ΔT and the specific value substantially indicating the amount of energization of the semiconductor element.

4. A method of estimating a temperature according to claim 2, wherein the first object is a stator iron core of an electric motor,

wherein the second object is a stator coil of the electric motor, and

wherein the step (d) includes a process of determining the temperature increment quantity ΔT in accordance with a specific value substantially indicating the amount of energization of the electric motor from the relation between the predetermined temperature increment quantity ΔT and the specific value substantially indicating the amount of energization of the electric motor.

5. A method of estimating a temperature according to claim 4, wherein the step (c) includes a process of determining the temperature of the stator iron core on the basis of the temperature of a coolant for cooling the stator of the electric motor and the specific value substantially indicating the amount of energization of the electric motor.

6. A method of estimating a temperature according to claim 1, wherein the second object is a stator iron core of an electric motor,

wherein the first object is a coolant for cooling the stator of the electric motor, and

wherein the step (d) includes a process of determining the temperature of the stator iron core on the basis of the coolant temperature and a specific value substantially indicating the amount of energization of the electric motor.

7. A method of estimating a temperature according to claim 1, wherein the second object is a power semiconductor element,

wherein the first object is a coolant for cooling the power semiconductor element,

wherein the step (c) includes a process of measuring the temperature of the power semiconductor element with a temperature sensor installed on the power semiconductor element, and

wherein the step (d) includes a process of determining the temperature of the coolant from the temperature change of the power semiconductor element in a state where the power semiconductor element is not energized.

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8. A temperature estimation device for estimating a temperature of one of first and the second objects from the temperature of the other object, comprising:

a temperature determination portion for determining the temperature of one of the first and second objects; and

an estimation portion for estimating the temperature of the other of the first and second objects on the basis of the temperature determined by the temperature determination portion and a specific value substantially indicating the amount of energization of the second object,

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wherein the second object is an energizable object that generates heat upon an energization thereof, wherein said second object exhibits a temperature change in response to heat which is more rapid than a temperature change of the first object in response to heat, and wherein said second object is positioned in the vicinity of the first object for exchanging heat therebetween such that said second object assumes a temperature approximately equal to that of the first object in the absence of heat generation therein.

9. A temperature estimation device according to claim 8, wherein, when the temperature of the first object is assumed as T1, the temperature of the second object as T2, and a temperature increment quantity of the second object that is related to the specific value substantially indicating the amount of the energization as ΔT, a relation between the temperature increment quantity ΔT and the specific value substantially indicating the amount of the energization is preliminarily set, and the estimation by the estimation portion is executed according to the following equation: $T2 = T1 + \Delta T$.

10. A temperature estimation device according to claim 9, wherein the second object is a power semiconductor,

wherein the first object is a coolant for cooling the power semiconductor element, and

wherein the estimation portion determines the temperature increment quantity ΔT in accordance with a specific value that substantially indicates the amount of energization of the power semiconductor element from the relation between the predetermined temperature increment quantity ΔT and the specific value substantially indicating the amount of energization of the semiconductor element.

11. A temperature estimation device according to claim 9, wherein the first object is a stator iron core of an electric motor,

wherein the second object is a stator coil of the electric motor, and

wherein the estimation portion determines the temperature increment quantity ΔT in accordance with a specific value substantially indicating the amount of energization of the electric motor from the relation between the predetermined temperature increment quantity ΔT and the specific value substantially indicating the amount of energization of the electric motor.

12. A temperature estimation device according to claim 11, wherein the temperature determination portion determines the temperature of the stator iron core on the basis of the temperature of a coolant for cooling the stator of the electric motor and the specific value substantially indicating the amount of energization of the electric motor.

13. A temperature estimation device according to claim 8, wherein the second object is a stator iron core of an electric motor,

wherein the first object is a coolant for cooling the stator of the electric motor, and

wherein the estimation portion determines the temperature of the stator iron core on the basis of the coolant temperature and a specific value substantially indicating the amount of energization of the electric motor.

14. A temperature estimation device according to claim 8, wherein the second object is a power semiconductor element,

wherein the first object is a coolant for cooling the power semiconductor element,

wherein the temperature determination portion measures the temperature of the power semiconductor element with a temperature sensor installed on the power semiconductor element, and

wherein the estimation portion determines the temperature of the coolant from the temperature change of the power semiconductor element in a state where the power semiconductor element is not energized.